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10/758,167

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35884 7590 08/21/2007  
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EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT

PAPER NUMBER

1756

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/758,167	<b>Applicant(s)</b> KIM ET AL.	
	<b>Examiner</b> Martin J. Angebrannt	<b>Art Unit</b> 1756	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 June 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 10,13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10,13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1756

1. The response of the applicant has been read and given careful consideration. The 112 rejections are withdrawn and so the arguments of the applicant are rendered moot.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 10, it should state that the stamper is at a temperature of 100-200 degrees C. (See prepub at [0043]). The resin temperature is not discussed in the instant specification. The current language does not make it clear what is within the temperature range, the stamper, the resin or both.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3,5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunitomo et al. JP 2001-056959 (machine translation of record), in view of Rijpers et al. '081, Sawada et al. EP 737965 and Tokuda et al. '239.

Kunitomo et al. JP 2001-056959 teach optical recording media formed on an embossed/stamped substrate, a reflective/dielectric layer, an optical recording layer, a dielectric layer and a protective layer [0004,0006]. The use of polymer substrate including thermoplastics, such as polyarylates, polyesters, polyether sulphone, polyolefins and the like [0007]. The

Art Unit: 1756

medium should have an elastic modulus of 50 or more GPa [0011]. See example 1, which has a bending modulus of 83 GPa, comprising an embossed substrate, a reflective layer, a dielectric layer, an optiomagnetic recording layer, a dielectric layer and a protective layer [0044-0048].

**Note GPa is  $10^9$  and MPa is  $10^6$  so this reference would be a 102 rejection if the claims eliminated the inorganic requirement.**

Rijpers et al. '081 teach that the substrate can be opaque if the laser is incident from the cover/transparent layer side (rather than through the substrate) [0033].

Tokuda et al. '239 teach that to form opaque substrates dyes, pigments, fillers or the like can be added to the resin to form such articles as optical disk substrates (7/15-19).

Sawada et al. EP 737965 teaches the coloration of the substrates to make the optical roecirding media easily identifiable (2/14-30)

As the medium of Kunimoto is accessed from the side of the recording medium opposite the substrate, it would have been obvious to modify the medium of Kunitomo et al. JP 2001-056959 by adding pigments or dyes to the substrate to render it opaque as taught by Tokuda et al. '239 with a reasonable expectation of forming a useful optical recording medium based upon the disclosure by Rijpers et al. '081 to allow the recording medium to be easily identified as discussed by Sawada et al. EP 737965 without concern for the performance of the medium as it is not accessed through the substrate.

6. Claims 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishima '635, in view of Rijpers et al. '081, Sawada et al. EP 737965 and Tokuda et al. '239.

Kishima '635 teach a topside optical recording media where the substrate can be polyetherimide or polysulfone. [0059,0073]. A phase change recording medium is disclosed

Art Unit: 1756

with respect to figure 2, where the substrate is coated with a reflective layer, a dielectric layer, a recording layer and two other dielectric layers [0079-0080]. A magnetooptic recording medium comprising a substrate, a reflective film, a dielectric, a recording layer, a second magnetic layer and a dielectric layer [0084-0085].

As the medium of Kishima '635 is accessed from the side of the recording medium opposite the substrate, it would have been obvious to modify the medium of Kunitomo et al. JP 2001-056959 by adding pigments or dyes to the substrate to render it opaque as taught by Tokuda et al. '239 with a reasonable expectation of forming a useful optical recording medium based upon the disclosure by Rijpers et al. '081 to allow the recording medium to be easily identified as discussed by Sawada et al. EP 737965 without concern for the performance of the medium as it is not accessed through the substrate.

7. Claims 1-3, and 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over either of (Kunitomo et al. JP 2001-056959 or Kishima '645), in view of Rijpers et al. '081, Sawada et al. EP 737965 and Tokuda et al. '239, further in view of Lee et al. '768.

Lee et al. '768 teaches standard dimensions for high density optical recording media in table 5, and includes disc diameters of 45 mm, central holes of 10-15 mm, and disc thicknesses of 0.3-0.6 mm (see also [0023-0025]). The cover layers can be 100-200 nm (0.1 –0.2 microns) [0024]. The central hole of 15 mm in diameter is standard for DVD and CD. [0016,0018].

To address embodiments bounded by the claims, but not anticipated or rendered obvious above, it would have been obvious to modify the medium resulting from the combination of either of (Kunitomo et al. JP 2001-056959 or Kishima '635), in view of Rijpers et al. '081, Sawada et al. EP 737965 and Tokuda et al. '239 by forming minidisks, which would be useful in

Art Unit: 1756

digital cameras, video recorders or the like having the standard dimensions taught by Lee et al.

'768 with a reasonable expectation of success.

8. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over either of (Kunitomo et al. JP 2001-056959 or Kishima '645), in view of Rijpers et al. '081, Sawada et al. EP 737965, Tokuda et al. '239 and Lee et al. '768, further in view of Ohno '443.

Ohno '443 teaches an Ag-O layer between the reflective layer and the substrate in the examples to improve the quality of the reflective layer. (examples and [0034-0037]. The provision of a layer of resin or a dielectric layer between the reflective layer and the substrate is disclosed [0080]. There are also dielectric layers sandwiching the recording layer.

It would have been obvious to one skilled in the art to modify the optical media to modify the media resulting from the combination of either of (Kunitomo et al. JP 2001-056959 or Kishima '645), with Rijpers et al. '081, Sawada et al. EP 737965, Tokuda et al. '239 and Lee et al. '768 by adding an Ag-O dielectric layer between the reflective layer and substrate as taught by Ohno '443 with a reasonable expectation of gaining the improvements in the reflective layer ascribed to this by Ohno '443.

9. Claims 1-3,5-7,10 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over either of (Kunitomo et al. JP 2001-056959 or Kishima '635), in view of Rijpers et al. '081, Sawada et al. EP 737965 and Tokuda et al. '239, combined with (Kashiwakura et al. '097 and/or Takahashi et al. '492) and Murata et al. '618.

Kashiwakura et al. '097 teach injection molding of magneto-optic recording media substrates where the mold temperature is 111-142 degrees C. (3/45-64). The resins temperature is 310-735 degrees C (5/23-35)

Art Unit: 1756

Takahashi et al. '492 teach injection molding optical recording media where the mold temperature is held at 130 to 140 degrees C (1/63-2/14).

Murata et al. '618 teaches with respect to figure 4, the formation of a stamper for making optical recording media disks where a heat insulating layer is formed on the surface of the Ni stamper (S14-S15). The heat insulating layer can be zirconia, a ceramic, a metal (Bi) (6/54-7/14) or a polymer, such as polyimide (5/45-51, 11/55-12/30). The polyimide can be applied by spin or spray coating (11/62-67). The presence of the heat insulating layer enhances the transferability of the pattern and reduces the time (tact) for the molding process without modification of conventional equipment. (2/35-42)

It would have been obvious to one skilled in the art to modify the process for making the media rendered obvious by over either of (Kunitomo et al. JP 2001-056959 or Kishima '635), in view of Rijpers et al. '081, Sawada et al. EP 737965 and Tokuda et al. '239 by using injection molding conditions conventional to the molding of optical and magnetooptical recording media substrates disclosed by Kashiwakura et al. '097 and/or Takahiashi et al. '492 including holding the mold temperature at 111-142 degrees C and to use a stamper in the mold which has a thermal insulating layer to improve the quality of the transferred pattern and reduce molding time as taught by Murata et al. '618.

10. Claims 1-3,5-7 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over either of (Kunitomo et al. JP 2001-056959 or Kishima '635), in view of Rijpers et al. '081, Sawada et al. EP 737965 and Tokuda et al. '239, combined with (Kashiwakura et al. '097 and/or Takahiashi et al. '492) and Miya et al. EP 1086797.

Miya et al. EP 1086797 teach nickel stampers for optical recording media where DLC is the surface layer and Si, W, TiC, SiC or CrC are provided as an intermediate layer for adhesion. [0029-0040]. The carbide layer provides wear resistance and good lubrication, resulting in little damage after many molding cycles.

It would have been obvious to one skilled in the art to modify the process for making the media rendered obvious by over either of (Kunitomo et al. JP 2001-056959 or Kishima '635), in view of Rijpers et al. '081, Sawada et al. EP 737965 and Tokuda et al. '239 by using injection molding conditions conventional to the molding of optical and magneto-optical recording media substrates disclosed by Kashiwakura et al. '097 and/or Takahashi et al. '492 including holding the mold temperature at 111-142 degrees C and to use a stamper in the mold which has an insulating dielectric as an intermediate layer and a DLC surface to improve the wear resistance of the stamper by Miya et al. EP 1086797.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Saeki et al. JP 2000-195100 (abstract), Yamada et al. '800 ((abstract), JP 2001-093190 (abstract), Maruyama et al. '961 (abstract) and Rosen et al. '817 (6/14-17) teach the use of opaque or colored substrates in optical recording media

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after



Art Unit: 1756

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Martin J Angebranndt  
Primary Examiner  
Art Unit 1756

02/23/2007

Application/Control Number: 10/758,167

Page 9

Art Unit: 1756

Art Unit: 1756

1. The response of the applicant has been read and given careful consideration. Responses to the arguments of the applicant are presented after the first rejection to which they are directed. With regard to the arguments concerning the priority document being of record and having a filing date in Korea before the publication date of Lee et al., the examiner agrees that the certified copy has been received, but the applicant has not made a certified translation of this document into English of record and so is not entitled to accordance of the priority date. The applicant's use of the term antedate is also incorrect on page 5 of the response. The applicant means to mean that the priority date of the instant application antedates the Lee reference, not the converse.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10,13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 10, the stamper can be inserted into the mold cavity, but it cannot be injected into it.

Claim 10 should make it clear that the material injected into the mold is used to form the substrate.

In the last line of claim please replace "the heat insulation layer and the pit pattern" with - - both the areas provided with heat insulation layer and the pit pattern

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1756

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-203342 and JP 2000-178736, combined with Takahashi et al. '500, Kunitomo et al. JP 2001-056959, Rijpers et al. '081, Tokuda et al. '239 and Sawada et al. EP 737965.

JP 2002-203342 (machine translation attached) teaches a nickel stamper which is treated on both the imprint and clamp faces with boriding process followed by the formation of a DLC layer [0049-0055]. The stamper exhibit a longer life and damage resistance [0065]. The provision of intermediate layers, such as those described in application 10-375444 (published as JP 2000-178736) to improve adhesion is disclosed [0048]. These are used to form optical recording media substrates [0001]

JP 2000-178736 (machine translation attached) teaches the use of various materials which act as interlayers, including silicides and silica carbides, to increase adhesion between the substrate material and the DLC [0009-0010].

Takahashi et al. '500 teach an injection molding process where the mold includes a stamper insert in example 1. The molding takes place at 100 degrees C. (col 14). The use of mold temperatures of 50-180 degrees C is disclosed. (8/4-12).

Kunitomo et al. JP 2001-056959 teach optical recording media formed on an embossed/stamped substrate, a reflective/dielectric layer, an optical recording layer, a dielectric layer and a protective layer [0004,0006]. The use of polymer substrate including thermoplastics, such as polyarylates, polyesters, polyether sulphone, polyolefins and the like [0007]. The medium should have an elastic modulus of 50 or more GPa [0011]. See example 1, which has a bending modulus of 83 GPa, comprising

Art Unit: 1756

an embossed substrate, a reflective layer, a dielectric layer, an optiomagnetic recording layer, a dielectric layer and a protective layer [0044-0048]. **Note GPa is  $10^9$  and MPa is  $10^6$  so this reference would be a 102 rejection if the claims eliminated the inorganic requirement.**

Rijpers et al. '081 teach that the substrate can be opaque if the laser is incident from the cover/transparent layer side (rather than through the substrate) [0033].

Tokuda et al. '239 teach that to form opaque substrates dyes, pigments, fillers or the like can be added to the resin to form such articles as optical disk substrates (7/15-19).

Sawada et al. EP 737965 teaches the coloration of the substrates to make the optical recording media easily identifiable (2/14-30)

It would have been obvious to one skilled in the art to modify the process of example 1 of JP 2002-203342 by adding an interlayer, such as those disclosed by JP 2000-178736 based upon the direction at [0048] and to use it in an optical recording media molding process, such as that disclosed by Takahashi et al. '500, where the mold temperature is 160-180 degrees C, based upon the direction at [0001] to forming optical recording media where the recording media resins form an opaque substrate for a topside optical recording medium, such as that Kunitomo et al. JP 2001-056959 with a reasonable expectation of forming a useful topside read medium based upon the direction of Rijpers et al. '081, Tokuda et al. '239 and Sawada et al. EP 737965 who describe the use of opaque/colored substrates with media meant to be accessed from the opposite side form that substrate.

The combination set forth above relies upon additional references and includes teachings of all the limitation of the claims and so the arguments that specific limitation are not taught in the previous rejections have been addressed.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. JP 03-019154 and JP 2000-228037, combined with Takahashi et al. '500, Kunitomo et al. JP 2001-056959, Rijpers et al. '081, Tokuda et al. '239 and Sawada et al. EP 737965.

Watanabe et al. JP 03-019154 teach the formation of DLC coating over the front face of stampers for optical recording media. The use of various materials for an adhesion promoting layer including oxide, and carbides of Si or Ge and various metals (page 2/upper right column).

JP 2000-228037 (machine translation attached) teaches the formation of a DLC coating on the rear face of a stamper to enhance the durability of the stamper. (it rubs against the mold surface) [0014]. The use of this in molding where the mold temperature is more than 100 degrees C is disclosed. [0019,0004]

It would have been obvious to one skilled in the art to modify the process of Watanabe et al. JP 03-019154 by coating the DLC layer on the backside of the stamper as taught by JP 2000-228037 with an interlayer beneath all the coatings to improve adhesion based upon the direction at on page 2 of the cited reference and to use it in an optical recording media molding process, such as that disclosed by Takahashi et al. '500, where the mold temperature is 160-180 degrees C, based upon the direction at [0001] to forming optical recording media where the recording media resins form an opaque substrate for a topside optical recording medium, such as that Kunitomo et al. JP 2001-056959 with a

Art Unit: 1756

reasonable expectation of forming a useful topside read medium based upon the direction of Rijpers et al. '081, Tokuda et al. '239 and Sawada et al. EP 737965 who describe the use of opaque/colored substrates with media meant to be accessed from the opposite side from that substrate.

7. Claim 10,13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. JP 03-019154 and JP 2000-228037, combined with Takahashi et al. '500, Kunitomo et al. JP 2001-056959, Rijpers et al. '081, Tokuda et al. '239 and Sawada et al. EP 737965, further in view of Murata et al. '618.

Murata et al. '618 teaches with respect to figure 4, the formation of a stamper for making optical recording media disks where a heat insulating layer is formed on the surface of the Ni stamper (S14-S15). The heat insulating layer can be zirconia, a ceramic, a metal (Bi) (6/54-7/14) or a polymer, such as polyimide (5/45-51, 11/55-12/30). The polyimide can be applied by spin or spray coating (11/62-67). The presence of the heat insulating layer enhances the transferability of the pattern and reduces the time (tact) for the molding process without modification of conventional equipment. (2/35-42)

To address the embodiments bound by the claims, but not rendered obvious above, the examiner cites Murata et al. '618 and holds that it would have been obvious to processes rendered obvious above by the combination of Watanabe et al. JP 03-019154 and JP 2000-228037 with Takahashi et al. '500, Kunitomo et al. JP 2001-056959, Rijpers et al. '081, Tokuda et al. '239 and Sawada et al. EP 737965 by using other insulating materials such as polyimide taught by Murata et al. '618 as the interlayer in the back surface of the stamper, in place of the materials disclosed by Watanabe et al. JP 03-019154 with a reasonable expectation of gaining the advantages disclosed by Murata et

Art Unit: 1756

al. '618, based upon the disclosure of the equivalence of polyimides with metals and ceramics by Murata et al. '618.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Martin J. Angebranndt  
Primary Examiner  
Art Unit 1756

8/15/07